

REMARKS

The Office Action dated October 21, 2010, has been received and carefully noted. The above amendments and following remarks are being submitted as a full and complete response thereto. Claims 1-3, 6-9, and 19-20 are under consideration and claims 10-18 are withdrawn. By this Amendment, claims 1 and 19 are amended. Support for the amendments to claims 1 and 19 can be found in the specification, for example, at page 14, lines 3-4, and page 14, lines 11-20. No new matter has been added. Reconsideration of the rejection of the claims is respectfully requested.

Rejection under 35 U.S.C. §103

Claims 1-3, 6-9, and 19-20 are rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Ishibashi (U.S. Patent No. 6,375,756) in view of Bridges (U.S. Patent No. 5,012,868) and Reale (U.S. Patent No. 5,451,754).

The Examiner concedes that Ishibashi does not teach a power supply to apply a bias voltage and means for changing the polarity of the bias voltage. The Examiner, however, alleges that Bridges teaches applying a D.C. bias voltage to a heating circuit to inhibit corrosion and Reale teaches a bias voltage switch. Thus, the Examiner takes the position that the claimed invention would have been obvious in view of the cited references. Applicants respectfully traverse these grounds of rejections.

Although Bridges discloses applying a D.C. bias voltage at col. 4, lines 1-4 as relied upon by the Examiner, the polarity of the D.C. bias voltage in Bridges is always negative. Specifically, the disclosure of Bridges teaches that the D.C. bias current is generated by maintaining a small difference in the duration of positive and negative half

cycles of the main A.C. heating current (col. 9, lines 15-62, and col. 13, lines 25-40). Because the D.C. bias current is generated by slightly delaying the initiation points of the positive half cycles of the A.C. current compared to the initiation points for the negative half cycles (col. 9, lines 33-36), there is a slightly smaller current in each positive half cycle compared to the corresponding negative half cycle (col. 9, lines 37-40). Thus, the net D.C. bias voltage that is developed is always negative (see col. 7, lines 8-10, and col. 16, lines 22-28). This is also evident from Fig. 4 of Bridges where 287 is the net D.C. bias current and is on the negative side of the scale as well as Fig. 10 of Bridges. Thus, Bridges discloses applying a negative D.C. bias voltage to prevent corrosion of the main electrode.

The Examiner refers to switch 238 of Figure 3 and appears to take the position that this switch is similar to the claimed means for changing the polarity of the bias voltage. Although Bridges discloses that the main heating electrode is alternatively switched to the positive and negative polarity by switch 238, the polarity is changed as a part of the A.C. heating circuit of the main electrode (col. 8, lines 30-39), not as a part of the D.C. bias voltage. Thus, in contrast to the Examiner's assertion, Bridges does not disclose or teach changing the polarity of the D.C. bias voltage. In fact, the D.C. bias voltage of Bridges is always negative as discussed above.

Moreover, Bridges discloses applying a D.C. bias voltage throughout the heating operation of the main electrode (the entire disclosure of Bridges). Therefore, employing the teachings of Bridges in the claimed invention would have resulted in applying the D.C. bias voltage throughout the operation of the claimed apparatus including the film

formation step and the cleaning step. However, the claimed invention applies the bias voltage to the catalytic body solely during the cleaning step (page 17, line 24 – page 18, line 7) and the polarity of the bias voltage is changed based on the type of the cleaning gas used.

With regard to the third reference, Reale, the Examiner refers to switch 22 of Fig. 1 of Reale and alleges that the skilled artisan would have been motivated to adopt the bias voltage switch of Reale to switch the polarity as taught by Bridges (page 6, second last paragraph of the Office Action). Applicants respectfully traverse this ground of rejection.

First, as discussed above, Bridges does not disclose or teach switching the polarity of the bias voltage. Second, although various positions of switch 22 in Fig. 1 of Reale result in varying the polarity of a D.C. voltage, this change in polarity results in the deposition of a specific net charge on the surface 14 (col. 5, lines 25-27), not in the reduced absorption of nitrogen oxide species on the inner surfaces of the corona generating devices. In fact, Reale clearly discloses that it is the formation of a substantially continuous, thin, uniform, electrically conductive, non-permeable and non-corroding film of a metal deposited in the amorphous form on the element adjacent to the corona generating electrode that prevents the adsorption of nitrogen oxide species on the inner surfaces of the corona generating devices (col. 5, lines 41-49), not the change in polarity of the DC voltage.

The Examiner takes the position that the motivation to use Bridges and Reale is that they both teach inhibiting corrosion (page 6, last paragraph of the office Action). If

the skilled artisan would have employed Reale because it teaches preventing corrosion, the skilled artisan would have used a thin film of metal in the amorphous form as taught by Reale for preventing corrosion, not switch 22 of Reale.

Taken together, in contrast to the Examiner's assertion, none of the cited references alone or in combination disclose or teach changing the polarity of the bias voltage to prevent corrosion. For at least the above reasons, claims 1 and 19 are not obvious over the cited references. Claims 2-3, 6-9, and 20 are also not obvious over the cited references because of their dependence from claim 1. In view of the above, applicants respectfully request reconsideration and withdrawal of the obviousness rejection of claims 1-3, 6-9, and 19-20 over the cited references.

Information Disclosure Statement

The Examiner has not considered the Information Disclosure Statement filed on February 19, 2010, because the Examiner alleges that a fee was due for filing the IDS. Applicants note that applicants have certified that each item of information in the IDS was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS, and therefore no fee is required. Accordingly, applicants respectfully request the Examiner to consider the IDS of February 19, 2010.

Should the Examiner determine that any further action is necessary to place this application into better form for allowance; the Examiner is encouraged to telephone the undersigned representative at the number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, referencing Attorney Dckt. No. 029567-00010.

Respectfully submitted,



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